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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**  
**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**



In re the application of:  
GARY A. HARPELL ET AL.

Docket: 30-4496CONT

Serial Number: 09/981,611

Group Art Unit: 1771

Filed: October 16, 2001

Examiner: E. Cole

For: FLEXIBLE FABRIC FROM FIBROUS WEB AND DISCONTINUOUS  
DOMAIN MATRIX

**BRIEF FOR APPELLANT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Applicants hereby appeal to the Board of Patent Appeals and Interferences from the decision of the Primary Examiner dated October 12, 2005, finally rejecting claims 28-30. A Notice of Appeal was filed on April 12, 2006. An oral hearing is not requested.

The Commissioner is authorized to charge the Appeal Brief Filing Fee of \$500.00 to Deposit Account No. 01-1125. In the event that the Commissioner determines that an extension of time is required in order for this submission to be timely, it is requested that this submission include a petition for an extension for the required length of time and the Commissioner is authorized to charge any additional fees which may be required by this paper, or credit any overpayment to Deposit Account No. 01-1125.

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**1. REAL PARTY IN INTEREST**

The real party in interest is Honeywell International Inc., successor in interest to AlliedSignal Inc., who is the assignee of record.

**2. RELATED APPEALS AND INTERFERENCES**

The present patent application has no related appeals, interferences or judicial proceedings pending in the USA. There is an opposition pending against European patent EP1161341B, the European counterpart to the present patent application.

**3. STATUS OF CLAIMS**

Claims 28-30 are presented on appeal. These claims have been finally rejected in the Office Action identified above. A copy of the claims is reproduced in the Claims Appendix (Section 8).

Claims 1-27 have been cancelled.

**4. STATUS OF AMENDMENTS**

An amendment after final rejection was filed (December 12, 2005), but not entered by the Examiner, who concluded that the amendment failed to place the application in condition for allowance.

**5. SUMMARY OF CLAIMED SUBJECT MATTER**

The invention is a method of making a highly flexible, ballistically effective composite (see Figure 1) having an SEAT value from 257 to 377 J-m<sup>2</sup>/Kg on impact by .38 caliber, 158 grain bullets (page 27, Table 1). The method comprises the steps of arranging a plurality of parallel filaments to form a unidirectionally oriented fibrous web (page 18, lines 7-9, Figure 1), placing matrix islands within the plurality of filaments (page 18, lines 10-12) and causing each matrix island to connect a least two filaments in fixed relationship (page 4, lines 2-4). Each of the matrix islands has an average size of less than 5 mm in a planar dimension (page 9, lines 3-4), and the final volume ratio of matrix to the plurality of filaments in the composite is approximately 0.4 or less (page 7, lines 7-11). Reference to Figure 1 shows composite 10 comprising a fibrous web 12 and a domain matrix 14. The

fibrous web 12 is made of filaments 16 that are unidirectionally oriented. The domain matrix 14, shown separately in Figure 1A as comprising individual matrix islands 18, is structured within the fibrous web 12, and defined therein by the fibrous web 12. See paragraph bridging pages 7 and 8 of Appellants' specification.

**6. GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

A. Claims 28-30 stand rejected under 35 U.S.C. §102(b) as anticipated by WO 93/08322; and

B. Claims 28-30 stand rejected under 35 U.S.C. §103(a) as obvious over WO 93/08322.

**7. ARGUMENT**

A. Are claims 28-30 unpatentable under 35 U.S.C. §102(b) as anticipated by WO 93/08322.

Claims 28-30 are grouped together for consideration.

The reference fails to teach Appellants' claimed step of arranging a plurality of parallel filaments to form a unidirectionally oriented fibrous web. Appellants' claims are therefore not anticipated by the cited reference. "A claim is anticipated only if each and every element as set forth in the claim is found, whether expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F2d 628, 631, 2 USPQ2d 1051, 1053 (Fed.Cir. 1987).

In particular, the Examiner notes that in WO 93/08322 a roving may be used to make up the mat, that a roving is "an array of parallel strands," and concludes that the structure of the mat of WO 93/08322 is identical to the web structure of claim 28 of the instant invention. Appellants disagree with the Examiner's conclusion.

WO 93/08322 defines the term "mat" as "... a collection of intersecting fibers to which no binder is applied." (page 4, lines 3-4, emphasis added) The methods by which such a mat can be formed are set forth on page 6, lines 3-17 of the reference. These methods are: weaving of continuous fibers (lines 3-4), looping of continuous fibers (line 8), and air blowing of chopped fibers onto a shaped screen

(lines 12-14). In the examples of WO 93/08322, a mat was formed by air-laying chopped fibers on a screen (Example 1) or by weaving (Example 2). Each of these methods produces an array of intersecting fibers.

In contrast, the fibrous web of Appellants' claim 28 is a "unidirectionally oriented fibrous web." The structure of a unidirectionally oriented fibrous web is defined in Appellants' specification on page 3, line 27, to page 4, line 2: "A fibrous web is a layer defined by a plurality of fibers. Typically, the layer is thin and defines a surface, having a depth of at least one filament. Preferably, the fibrous web is a tape or layer in which the fibers are unidirectional. By unidirectional it is meant that the fibers are parallel to each other within the web, or that the fibers extend along a given directional axis, without overlap." (emphasis added)

There is thus a clear distinction between what the cited reference teaches and what Appellants are claiming.

B. Are claims 28-30 unpatentable under 35 U.S.C. §103(a) as obvious over WO 03/08322.

Claims 28-30 are grouped together for consideration.

The reference neither teaches nor suggests the method of claims 28-30 for the reasons that follow. The arguments set forth in 7.A are repeated here. Additionally, the recited methods of making the mat of WO 03/08322 teach away from Appellants' claimed method – the recited methods require that the mat have a plurality of intersecting fibers whereas Appellants' method requires that a unidirectionally oriented fibrous web be formed. "To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

**CONCLUSION**

For the reasons stated, Appellants respectfully submit that the claims on appeal, i.e., claims 28-30, should be found allowable.

Respectfully submitted,  
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**8. CLAIMS APPENDIX**

Claim 28. A method of making a highly flexible, ballistically effective composite having an SEAT value from 257 to 377 J-m<sup>2</sup>/Kg on impact by .38 caliber, 158 grain bullets comprising the steps of:

- a) arranging a plurality of parallel filaments to form a unidirectionally oriented fibrous web;
- b) placing matrix islands within the plurality of filaments, each of said matrix islands having an average size of less than 5mm in a planar dimension;
- c) causing each matrix island to connect at least two filaments in fixed relationship;

wherein the final volume ratio of matrix to the plurality of filaments in the composite is approximately 0.4 or less.

Claim 29. The method of claim 28, wherein said placing step comprises spraying matrix particles.

Claim 30. The method of claim 28, wherein said causing step is selected from the group consisting of applying heat, applying pressure and a combination thereof.

**9. EVIDENCE APPENDIX**

None.

**10. RELATED PROCEEDINGS INDEX**

None.